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ABSTRACT

This guide describes the portable equipment necessary for preparing a video production, and recommends ways of using that equipment to create a video program. Step by step instructions are provided for setting up the equipment for battery operation or with a mains electricity supply. Information is also given on procedures for recording, playing back the recorded tape, improving sound quality, post dubbing of sound, editing, assembly editing, and insert editing. A checklist of portable equipment is provided, and a detailed description of the components and features of the video-camera includes diagrams. (MER)

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VIDEO

A GUIDE TO THE USE OF PORTABLE VIDEO EQUIPMENT

by

Robert W. Rowatt

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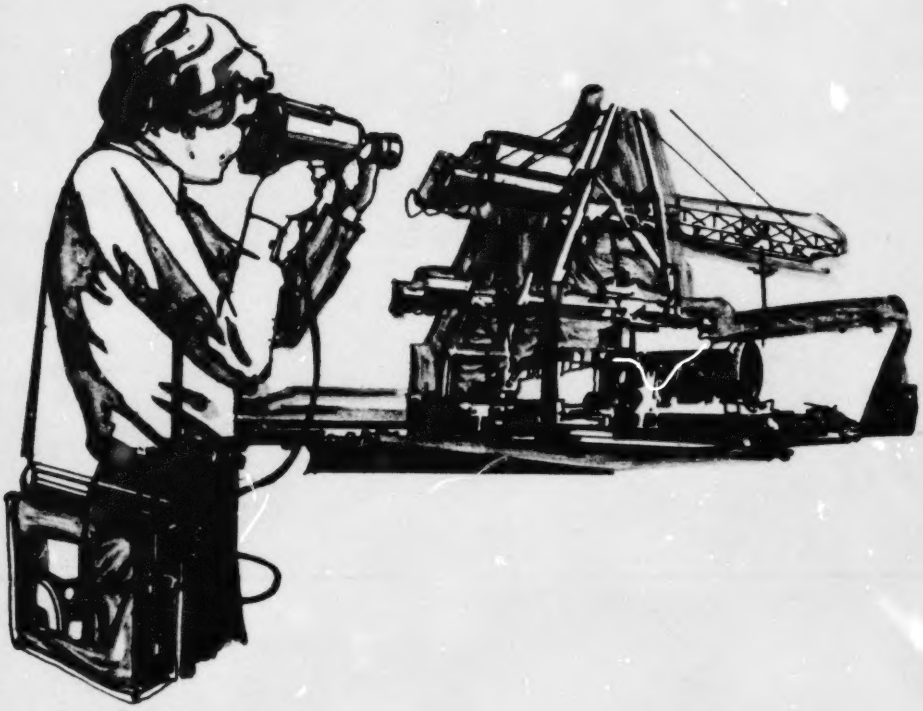
Designed by Ogilvie Design

Setting Up

(i) **For portable use**

When the equipment is used in locations which do not have easy access to a mains power supply, the portable video recorder has to be powered by its own internal batteries. BEFORE SETTING OUT ENSURE THAT THE BATTERIES ARE FULLY CHARGED.

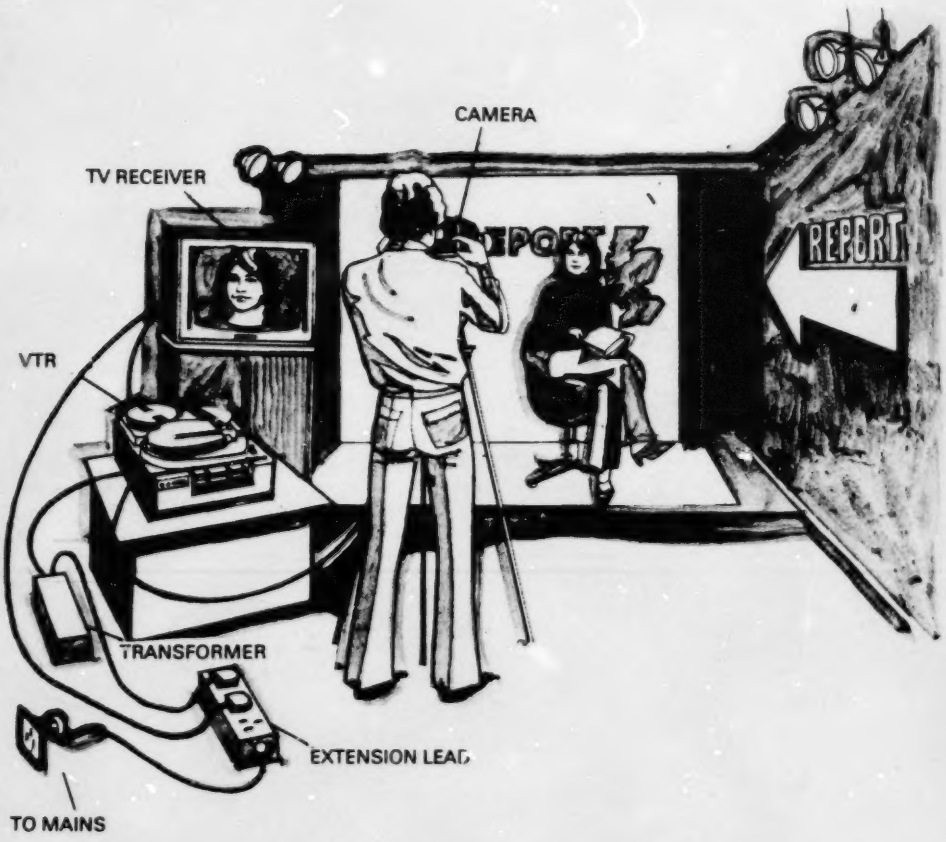
The following diagram shows the set-up for portable use: —



(i) **For use with mains electricity supply**

Where a mains electricity supply is easily accessible it should be used. In this case the mains adapter unit and an extension lead are required. The equipment is then set up as shown.

Wherever possible the camera should be mounted on a tripod to allow smooth camera movements.



Recording

With the equipment set up as shown previously, the recorder should be set in the record mode by depressing the play and record keys simultaneously. The tape in the recorder should not move until the camera trigger is pressed. One press of the trigger starts the tape movement and consequently starts the recording. A second press of the trigger stops the recording. During recording, pictures and synchronised sound are recorded simultaneously on to the video tape. If a television receiver is available and is connected to the video recorder, the pictures and sound may be monitored during recording. If no television receiver is available the pictures may still be monitored on the viewfinder of the camera.

It is worth allowing the recorder to run for a few seconds in the record mode before and after the action which has to be recorded. This precaution will make the job of editing easier and prevent the loss of good material.

WARNING: Never point the camera at the sun or any bright light. This will damage the camera tube and spoil all subsequent recordings. If the camera has to be left unattended for any length of time, replace the lens cap to protect the lens and the camera and secure the tripod head.

Playback

When a section has been recorded the tape should be rewound using the controls on the recorder. Play back of the sequence is then possible by depressing the play key on the recorder. The pictures are replayed in the camera viewfinder and on the television receiver. Sound may be monitored either by headphones or via the loudspeaker in the television receiver.

It is always worth replaying a sequence after it has been recorded to ensure that the technical, visual and sound qualities are all up to the required standard.

Improving Sound Quality

If the quality of sound recorded by the camera microphone is not good enough then an external microphone should be used. If the camera microphone is used the camera operator should remember to move as silently as possible. The operation of some of the lens controls, particularly the aperture control causes noises which are often picked up by the camera microphone and spoil an otherwise good sound track. In addition, any loose equipment like the camera lens cap may bump against other pieces of equipment and introduce unwanted sound on to the sound track.

The external microphone is plugged directly into the appropriate socket on the video recorder. This external microphone should be placed as near to the source of sound as possible. On many occasions it may be inappropriate to have the external microphone in view and so it is worth previewing the widest camera shot which will be used in a sequence and placing the microphone just out of shot. This may well mean either suspending the microphone or attaching it to a long pole which may be drawn out of shot by an assistant as the camera shot is widened.

If a television receiver is being used to monitor the recording, a loud squeal may be heard when the record mode is instituted. This is overcome by turning the volume on the receiver to zero during recording.

Post dubbing of sound

If the video recorder is equipped with an audio dubbing facility this can be used to replace the existing audio track with a new audio track. To do this, the recorder is set in the play mode, the audio dub control is depressed and the new audio track is recorded on to the tape for the duration required. The new audio track may be recorded from a microphone, gram deck, tape recorder or the output from a sound mixer. Any of these pieces of equipment should be connected to the appropriate sockets on the recorder (either 'mic in' or 'audio line in') before the recording commences. The pictures can be viewed as the recording is made.

It should be noted that operating the audio dub control erases the previous, synchronised sound track from the tape, until the control is released by depressing the stop button. It is always advisable to check the duration of the audio dub required before commencing the recording to ensure that the entry and exit points of the dub are not missed.

Editing

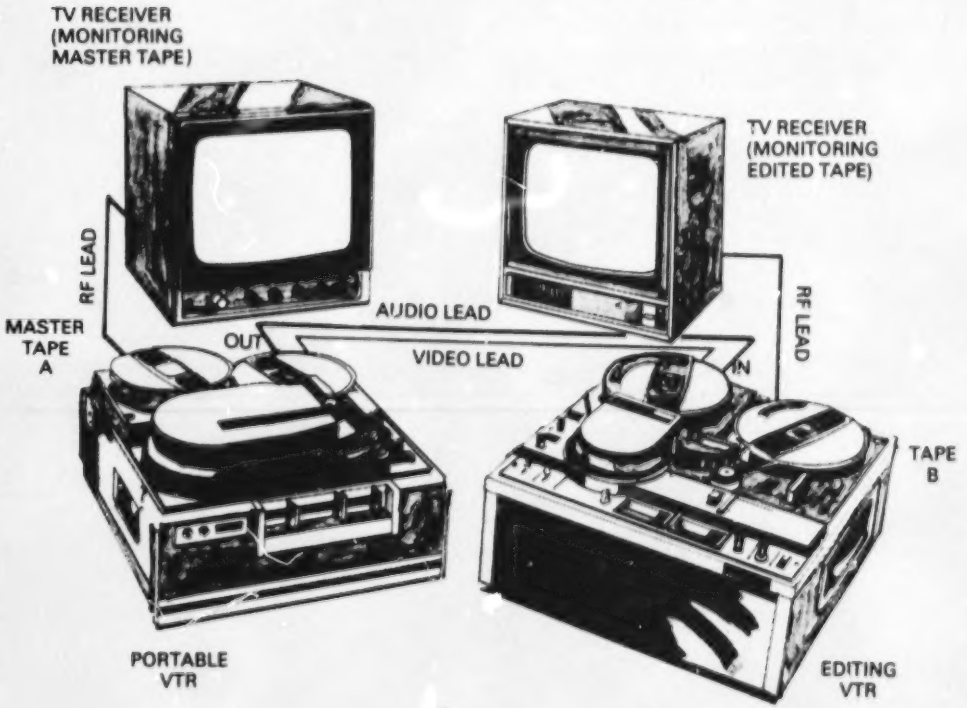
In most cases a video programme cannot be made by shooting a single sequence. This means that the master tape will have to be edited. Video tape cannot be cut and joined in the same way as audio tape and film.

There are two main types of video tape editing:

(1) Assembly editing
(2) Insert editing

Both of these methods of editing require the use of two video tape recorders one of which should be a machine capable of editing. This latter type of machine is normally a mains deck and is not portable.

The two machines should be set up as shown:



It is only possible to achieve a clean edit on video tape if both machines are running at their normal recording/replay speed when the edit button is pressed. The following methods will ensure that the edit is instituted where it is required with the machines running.

(i) **Assembly editing**

Assembly editing involves copying and editing together the required sequences in the correct order. The final edited tape which is produced is a first generation copy of the original material.

Method

Machine A — master tape

1 Decide on the beginning of the sequence to be transferred.

2 Find a cue point (preferably an audible cue), 10 to 15 seconds before this point.

3 Using a stop watch time the precise time interval between the cue point and the edit point. Enter this time in box A and in box Y below.

A

Machine B — tape being assembled

1 Decide on entry point of edit.

2 Find a cue point (audible), 5 to 10 seconds before this point.

3 Time the interval and enter time in box B.

B

Subtract time in box B from time in box A. This gives an overlap time which should be entered in box X below.

Wind tape A and B back to original cue points.

Start tape A at 0 seconds

Start tape B at

Press the edit button after tape B is running

Press record button at

Insert Editing

In insert editing, a new sequence in inserted directly on to the master tape replacing the signals on the master tape for the duration of the insert. A clean edit has to be made at the beginning of the insert and at the end of the insert. This requires the use of a machine which has insert editing facilities.

Method

Tape A — master tape

1 Decide on the beginning of the section which has to be erased in favour of the insert.

2 Find cue point (audible), 10 to 15 seconds before this point.

3 Time the interval and enter this time in box A and in box Y below.

Tape B — tape containing insert

1 Decide on entry point of insert.

2 Find cue point (audible), 5 to 10 seconds before this point.

3 Time this interval and enter the time in box B

B

Subtract the time in box B from the time in box A and enter the overlap time in box X below.

4 Time the duration of the insert and enter in box C.

C

Add the time in box C to the time in box B and enter in box Z below.

Wind tape A and tape B back to cue points.

Start tape A at 0 seconds.

Start tape B at

X

Press insert edit button at

Y

Press end edit button at

Z

Both of these methods of editing requires some practice and are time consuming. Consequently, a video programme should be planned in such a way that the number of edits are kept to a minimum.

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Checklist

The following checklist may be useful when using portable video equipment in different locations.

For use in the field (i.e. away from a mains power supply).

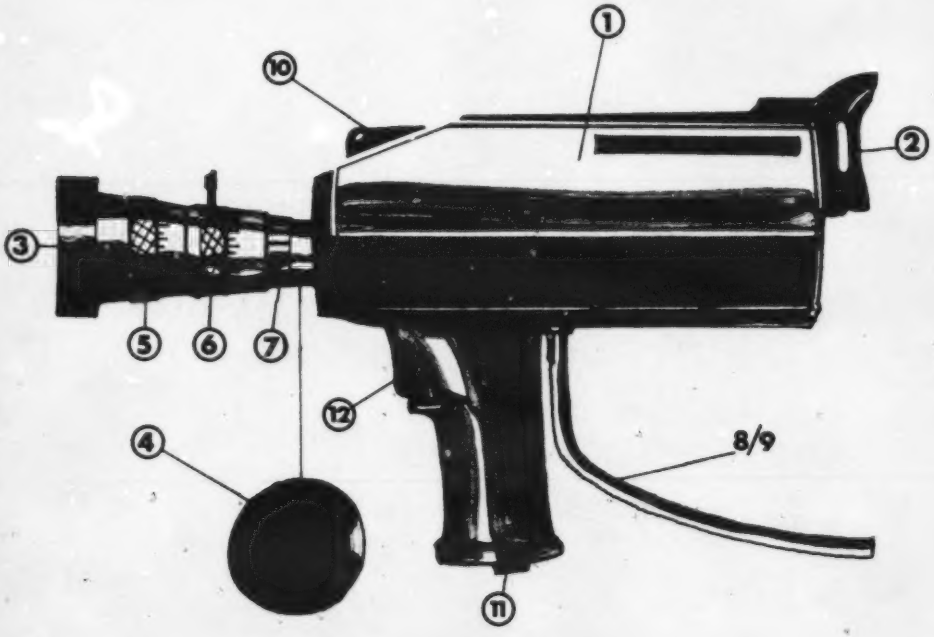
1 Camera
2 Tripod (optional)
3 Portable Video Recorder with fully charged battery.
4 Tape
5 Spare battery
6 Spare tape
7 External microphone (optional)
8 Headphones (optional)

The following list of equipment may be required if you are working within easy reach of a mains power supply and you wish full monitoring and playback facilities.

1 Camera
2 Tripod
3 Portable Video Recorder
4 Tape
5 External microphone (optional)
6 Headphones (optional)
7 Battery charger/mains unit
8 Television receiver
9 RF lead
10 Extension cable with four way plug board.

THE VIDEO CAMERA

A portable video recorder and its associated camera will allow you to record pictures and synchronised sound in almost any location. Depending on the equipment you have at your disposal, the camera may record pictures in either black and white or colour. Similarly, the recorder may use open reel video tape or video tape contained in a cassette. Portable video tape/cassette decks are powered from internal re-chargeable batteries. The battery charger unit, however, allows the deck to be used directly from the mains.



The following features are common to most video cameras.

1. The **camera body** contains the camera tube which converts the picture seen by the lens into an electrical signal which is passed to the recorder.
2. **Viewfinder.** This is really a small television set mounted on top of the camera. It displays the picture from the camera. When the recorder is run, in the record mode, these pictures are recorded on to the video tape. On larger video cameras the viewfinder will have separate controls for contrast and brightness. It is normally possible to view a replay from the video tape recorder on the camera viewfinder.
3. **The camera lens.** The most versatile type of lens is a zoom lens. This enables the operator to select a close-up shot or a wide shot without moving the camera position.
4. **The lens cap.** This protects the lens from accidental damage and should be replaced when the camera is not in use or is left at any time (e.g. during replay of a sequence).
5. **Focus Control.** Turning this control allows objects at varying distances from the camera to be focussed sharply. Focus is most critical in close-up shots.
6. **Zoom Control.** Turning this control varies the focal length of the lens. This has the effect of changing between a close-up and a wide angle shot.

7. **Aperture Control.** Altering this control varies the amount of light which is received by the camera tube. This alters the brightness of the picture. The aperture control is marked off in f numbers. The higher the f number the duller the picture displayed. This control may be especially useful in outdoor locations in strong sunlight. The aperture control also allows the picture to be faded out. Some controls have a c position which closes off the lens giving a blank screen.
8. **Power Lead.** This is required to supply power to the camera tube and the viewfinder.
9. **Video/Audio.** This composite lead carries video and audio signals to and from the video recorder.

   In some models, the power lead and the audio and video leads are all held in a single multi-core cable which attaches the camera to the video recorder.

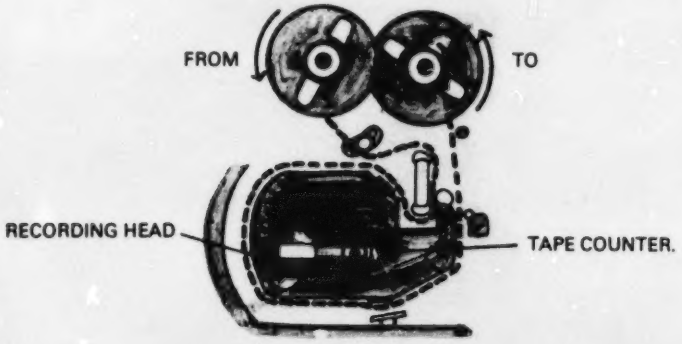
10. **Camera Microphone.** This feature is only present on some video cameras. The microphone picks up the sound coming from the direction in which the camera is pointed. The sound is then recorded on to the video tape.
11. **Tripod Bush.** This threaded hole allows the camera to be mounted on a tripod. It is recommended that wherever possible the camera is mounted on a tripod which increases its stability and allows smoother camera movements.
12. **Remote stop/start switch** (trigger) This allows the video recorder which has previously been set in the record mode to be remotely started or stopped. This means that only the camera need be held to control these operational modes.

PORTABLE VIDEO RECORDERS

There are two main types of portable video recorders:

(i) Open Reel Portable Video Recorders and
(ii) Portable Video Cassette Recorders.

(i) In open reel video recorders, the video tape is held on a single reel which is placed on the machine and enough tape is pulled out to allow it to be threaded around the recording heads of the recorder. A threading diagram for the tape is normally indicated somewhere on the case of the recorder. Here is a tape threading diagram for a typical portable open reel video tape recorder.



When the tape has been threaded around the recording head it should be located on the take up spool and wound on several turns until it holds. It is worth noting that only the shiny side of the video tape should be in contact with the recording heads. The open reel video recorder is now ready for operation.

(ii) With portable video cassette recorders, the video tape is enclosed within a plastic cassette. The cassette should be placed the correct way up, into the video cassette recorder. The video cassette recorder is now ready for use. In this video recorder, the tape is automatically threaded around the record heads when the recorder is put into the record mode.

The following features are common to most portable video recorders:

Operational Controls

The operational controls of a video recorder are similar to those of an audio cassette recorder. They are:

Rewind: This allows fast rewinding of the video tape after recording and before playback.

Stop: This cancels any previous operational control and switches the portable recorder off.

Play: This control causes the tape to run through the machine at the normal recording and replay speed. This control is operated when replaying tape or in conjunction with the record control when recording.

Fast Forward Wind: This control allows any part of a previously recorded tape to be rapidly located.

Record: When depressed in conjunction with the play control this allows the camera signals and sound to be recorded on to the video tape. In some recorders the record control can be depressed on its own to allow the camera to become operational without actually recording.Recording will not start until the camera trigger is depressed.

Pause: This control allows the tape to be temporarily stopped when in the record or play modes.

In addition to these operational controls most portable video recorders also have the following features: —

Audio Dub: This control allows a new sound track to be recorded in place of the existing sound track on a recorded tape. Operation of this control does not affect the picture track.

Socket for accepting an external power source: This is generally a low voltage power source which originates from a transformer. In most cases the transformer also acts as a battery charger for the portable video recorder's internal batteries.

"Camera In" Socket: This socket accepts the plug on the end of the camera lead attaching the camera to the video recorder. It is generally a multi-pin socket which carries camera and sound signals and switching leads from the camera trigger

Tracking Control: This control is operated if a band of the picture breaks up on replay.

External microphone socket: When sound recording is made using an external microphone the plug on the microphone lead is inserted into this socket. Inserting the plug into the socket automatically cuts out the camera microphone.

Headphone Socket: When headphones are inserted into this socket, sound may be monitored during recording or replay.

Radio frequency outlet socket: When a co-axial aerial lead is connected to this socket and to a television receiver, the sound and vision signals from the video tape recorder or camera may be monitored during replay or recording. In some video recorders, this facility requires the installation of an R.F. unit which is available as an optional accessory.

Battery level indicator: This meter indicates the state of charge of the internal batteries when the video recorder is set in an operational mode (record or replay).

Tape counter: This gives a numerical indication of the amount of tape which has run and allows easy location of specific sections of tape.